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long list of gifted men who would not accept the ordinary limitation of mind in body have something clearly wrong about them. Theirs is a wrong theory of art and of life.

Du Maurier's Peter Ibbetson is an autobiography of a man who during adolescence grew morbidly sensitive and bashful, though a man of handsome and imposing presence. He meets a beautiful dutchess, who later turns out to be an old playmate, dreams a striking dream about her, and finds she had dreamed at the same time the same dream of him. Hearing that the man he thought his uncle is his father he kills him and is imprisoned for life. For 25 years his dreams are filled with life with this beautiful lady. They were married, visited many scenes and lands. Everything, their dress, home, conversation were as natural as if real. At length he dreams she died (just as she did in reality do) and has an attack of suicidal mania, and is transferred to the mad-house. An interview with her spirit greets him and he dies as he finished his story.

Dr. S. Weir Mitchell, in his novel, *Far in the Forest*, describes several types of slight nervous ailment and a curious partnership between a blind and a deaf man, the former being a Swedenborgian dominated by auditory illusions. Paul Preston has the restless vivacity of slightly constructed characters, and like men of his type resembled certain immature feminine natures, and had a like attractiveness. He was easily pleased, and would go any length to escape pain, and a slight but painful malady bred a habit of resorting to opium, a habit most easily made and hardest to break. His moral energy gradually was lost, his property vanished, and even life in the backwoods could not save him. Shortly before death he characteristically lost his love of the drug.

#### TASTE AND SMELL.

PROFESSOR E. H. S. BAILEY, PH. D., University of Kansas.

LES ODEURS, *Demonstrations pratiques avec Volfactometre et le pésavapeur*, par M. Charles Henry, Paris, 1892.

In this valuable contribution to our knowledge of the odors, the properties of gases and vapors are discussed, more especially those points that refer to the tension of vapor and its expansion by heat. There are some inorganic bodies that possess an odor, but most of the perfumes are of organic origin. Various attempts have been made by Berthelot and others to classify odors, but the task is a difficult one. His classification is based upon the chemical composition of the organic bodies. The question naturally arises, is there any relation between chemical composition and odor? From some studies that have been made there seems to be a relation between the odor and the atomic weight. As the odor is in a great measure independent of the chemical composition, it must depend upon the molecular arrangement of the atoms and this seems to involve the discussion of isomeric bodies, and of the constitution of the more complex hydrocarbons.

There are six methods of extracting perfumes; expression, distillation, maceration, enfleurage, a pneumatic process, and finally, a process by solution in volatile liquids. From the various products thus obtained, the extracts, bouquets, pomades, etc., of commerce are obtained. Eugène Rimmel's table of classification of natural odors is of interest, and is the basis of specific description in regard to the sources of numerous perfumes.

It is supposed that perfumes are propagated by the emission of solid, liquid or gaseous particle, hence the laws of diffusion and of evaporation must be studied. But little is known of the diffusion

of solids, but the diffusion of liquids has been thoroughly studied. It is evident that the volatility of a liquid may be expressed by the weight of the liquid that evaporates per second from a square millimeter of surface, at a given temperature. This weight is proportional to the excess of the maximum tension of the vapor at that temperature over the tension that the vapor possesses in the air, and furthermore this weight varies in inverse ratio to the pressure of the air, there being a special factor for each liquid. On this account evaporation is of value in the determination of the purity of a liquid. The *pése-vapeur* described by the author is really a small hydrometer, floating in alcohol. At the upper end of this instrument is a cup into which the volatile liquid is poured. This cup slides up and down in front of a graduated scale. As the liquid evaporates, of course the instrument floats considerably higher after some time. Ether is taken as a standard of comparison. The laws that govern evaporation, when the surface is not exposed freely to evaporation, as when it is covered with some non-absorbing membrane, are of special interest and have been the subject of a series of experiments by the author and M. Gustave Robin. The instrument called an *olfactometer* gives what may be called the measure of the intensity of a perfume, as it is designed to determine the weight of the vapor that must be evaporated and must find its way into the nasal passages, before the operator can perceive the odor. Indeed, it is proposed to use it to estimate the comparative value of different perfumes.

The olfactometer consists of a glass cylinder supporting, by a cork in its upper end, two tubes sliding the one within the other, the outer tube being of paper and the inner of glass graduated in millimeters, and projecting above the apparatus, where it terminates in a forked tube carrying a glass stop-cock. The forked tube is introduced into the nostrils during the experiment, and a small quantity of any odorous substance is placed in the outer cylinder by a pipette, through the opening that is provided for that purpose. The operator then notes the time, inspires the air regularly, and slowly raises the tube. He notes the time when he first perceives the odor, which has penetrated through the paper, and reads the mark on the graduated tube.

By filling the tube with carbonic acid gas it is possible to determine the proportion of the volume of gas absorbed at each inspiration to the total volume of the tube. By means of a pneumograph it is possible to obtain a record of the inspirations and thus what may be called the coefficient of inspiration. The record is made upon the blackened surface of a paper attached to a cylinder, which slowly revolves. An interesting series of cuts is given to illustrate the effect of inspiration of different odors.

*The gustatory organs of Belidens Ariel*, Frederick Tuckerman, M. D.—*Journal of Anatomy and Physiology*, Vol. XXVI. p. 85.

The author describes in detail the circumvallate papilla, with the taste-bulbs, also the gustatory ridges and the fungiform papillæ. In regard to the gustatory ridges of this animal it may be noticed that there are structural characters common to both the circumvallate type of taste-area and the bulb-bearing ridges of *Ornithorynchus*. The ridges of *Belidens* furnish an intermediate stage in the process of development of the former from the latter; the more recent from the more primitive type of the taste-area. Hence an important link in the history of this development is supplied, and now that two types are found together, it is possible that further investigation will reveal the foliate type in its simplest form co-exerting with them.